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(54) **Title:** SCANNING TOY

(57) **Abstract:** An interactive shopping role-play toy having a toy item bin (100), a first set of toy items replicating shopping items (400), an input device (98) adapted to uniquely identify each of the toy items; and an audio playback device adapted to play an audio acknowledgment associated with the identified toy item. The audio acknowledgement is uniquely associated with the identified toy item. The input device (98) is configured to uniquely identify a toy item when the toy item is within physical proximity of the input device. Each toy item includes an RF identification tag (305) corresponding to a unique electronic identification, and the input device includes an RF identification tag reader (305).

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Scanning Toy

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001]   This application claim priority to U.S. Provisional Patent Application No.

5   60/346,456, filed on January 5, 2002, which is incorporated by reference herein for all

purposes.

BACKGROUND OF THE INVENTION

[0002]   Children enjoy emulating common adult activities. Role-play toys allow

10   children to pretend to engage in adult activities. One common adult activity often emulated

by children is shopping. Many role-play toys resemble items that adults encounter when

shopping. For example, non-interactive toy shopping carts and fake food items are popular

toys for young children. These toys offer children open-ended, imaginative play experiences.

However, the non-interactive nature of shopping role-play toys allows few opportunities for

15   educational enrichment. Additionally, children quickly become bored with non-interactive

toys.

[0003]   It is desirable to improve traditional shopping toys with interactive audio

and/or visual output to provide educational enrichment and a superior play experience.

SUMMARY OF THE INVENTION

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[0004]   Embodiments of the invention include toys including a scanner, as well as kits

that include scannable toy items.

[0005]   One embodiment of the invention is directed to a toy, comprising: (a) a

scannable toy item; (b) an electronic scanner configured to identify the scannable toy item

25   when the electronic scanner is brought within physical proximity to the scannable toy item;

and (c) an audio playback device electronically coupled to the electronic scanner, wherein the

audio playback device is configured to play an audio output that is uniquely associated with

the scannable toy item.

[0006]   Another embodiment of the invention is directed to a toy, comprising: (a) a container; (b) a plurality of toy items, each toy item of the first plurality replicating a shopping item; (c) an input device adapted to uniquely identify each of the toy items; and (d) an audio playback device adapted to play an audio output associated with the identified toy
5   item.

[0007]   Another embodiment of the invention is directed to a kit comprising: (a) a plurality of scannable toy items; and (b) a plurality of RF (radio frequency) identification tags respectively associated with the plurality of scannable toy items, wherein the RF identification tags are capable of being read by a scanner comprising an RF identification tag
10 reader.

[0008]   Another embodiment of the invention is directed to a kit comprising: (a) a plurality of scannable toy items; (b) a plurality of identification tags respectively associated with the plurality of scannable toy items; and (c) a transferable information storage medium comprising code for audio corresponding to the plurality of scannable toy items.

15 [0009]   These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]   Embodiments of the invention will be described with reference to the figures,
20 in which:

Figure 1 illustrates an embodiment of an interactive shopping role-play toy having a scanner;

Figure 2 illustrates an embodiment of a control console for a shopping role-play toy;

Figure 3 illustrates an embodiment of a scanner used by an interactive shopping role-play toy;

Figures 4A and 4B illustrate toy shopping items used in conjunction with an embodiment of
25 an interactive shopping role-play toy;

Figures 5A and 5B illustrate a schematic diagrams of an embodiment of an interactive shopping role-play toy;

Figure 6 illustrates a flowchart of a first mode of operation for an embodiment of an interactive shopping role-play toy;

30 Figure 7 illustrates a flowchart of a second mode of operation for an embodiment of an interactive shopping role-play toy; and

Figure 8A, 8B, and 8C illustrate flowcharts of a third mode of operation for an embodiment of an interactive shopping role-play toy.

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DETAILED DESCRIPTION

[0011]   As noted above, one embodiment of the invention is directed to a toy comprising a scannable toy item and an electronic scanner configured to identify the scannable toy item when the electronic scanner is brought within physical proximity to the scannable toy item. An audio playback device is electronically coupled to the electronic scanner, and is configured to play an audio output that is uniquely associated with the scannable toy item.

[0012]   In some embodiments, the toy comprises a toy shopping cart equipped with an electronic scanner. The electronic scanner can resemble a handheld bar code scanner commonly used by cashiers in stores. The electronic scanner can be configured to identify a toy shopping item, much as a real hand-held bar code scanner identifies real shopping items. The interactive shopping role-play toy generates one or more audio outputs in response to the identification of the toy shopping item.

[0013]   In embodiments of the invention where a scanner is used, a "scannable toy item" can refer to an item that can be electronically scanned by a scanner (i.e., the toy item can be electronically identified without physically contacting the scanner). A "non-scannable toy item" can be an item that cannot be scanned (i.e., the scanner cannot electronically identify the scanned item). In preferred embodiments, the scannable and non-scannable toy items are role-play toy items. Role-play toy items are toy representations of other real life items such as food items. In other embodiments, the scannable and non-scannable toy items could be non-role play toy items such as blocks with numbers, letters, and/shapes on them.

[0014]   To scan a scannable toy item, the scanner can be brought into close physical proximity to the scannable toy item (e.g., less than 1 inch). The scanner can electronically identify the scannable toy item even though the scanner does not come into contact with the scannable toy item. As with an ordinary scanner, the scanner could come into contact with the scannable toy item, and can still electronically identify the scannable toy item.

[0015]   Once the scannable toy item has been scanned, an audio playback device plays back audio outputs that correspond to the scannable toy item. For example, if the scannable toy item is a molded plastic representation of two chicken legs, then upon scanning the two chicken legs, the audio playback device may produce the output "two chicken legs".

[0016]   A scanner is one example of a suitable input device that can be used with the toy to produce unique audio outputs. In other embodiments, a suitable input device may be a keyboard that is on, for example, a shopping cart. In this example, a toy food item may have

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a number on the toy item and the child may input the number of the toy into the keyboard and subsequently receive a unique audio output corresponding to the toy food item.

[0017]   As shown by the examples below, the audio playback device can also prompt the user before the user scans a scannable toy item. For example, the audio playback device

5   can prompt the user in a game mode by providing the output "Can you find two chicken legs?" Specific examples of audio playback devices are provided below. In some embodiments, an audio playback device may include (i) a memory comprising code for pre-recorded audio segments and/or pre-recorded audio outputs, and code for any operating instructions for playing back audio after receiving the identity of a scanned toy item, (ii) a

10   processor, (iii) an amplifier, and (iv) a speaker.

[0018]   Thus, embodiments of the invention can provide audio outputs that are "uniquely" associated with the scannable toy items. For example, the unique audio output "You found one carton of milk!" may be unique to a scannable toy item in the form of one carton of milk. A unique audio output may be comprised of a specific combination of

15   pre-recorded audio segments (as shown below), where the segments would be recombined in other ways to produce other unique audio outputs. Alternatively, the unique audio output could be a pre-recorded audio output without combinable audio segments.

[0019]   Unique audio outputs are contrasted with non-unique audio outputs such as "beeping" that might occur when scanning food items in a regular grocery store. Of course,

20   as shown in the examples below, non-unique audio outputs such as beeping sounds or generic audio outputs (e.g., "super!") could be used in conjunction with unique audio outputs. A generic audio output can be an audio output that would be appropriate for any scannable toy item, and not for just one particular scannable toy item.

[0020]   The unique audio outputs can describe various attributes of the scannable toy

25   items. For example, the attribute may include the scannable toy item's color, shape, name, texture, size, etc. The attribute could also relate to the number of objects that are represented by the scannable toy item. For example, a single scannable toy item may include a molded plastic representation of seven molded cherries. In this example, a unique audio output may be "You found seven cherries!"

30   [0021]   Figure 1 illustrates an embodiment of an interactive shopping toy 99. In this embodiment, the interactive shopping toy 99 includes a shopping cart 100 and an electronic scanner 98 coupled to the shopping cart 100.

[0022]   The shopping cart 100 has a size, weight, and construction so that it can be used by children. For example, the shopping cart 100 can have dimensions that are less than

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3 ft^3. While the children may be of any suitable age, the children can be less than about 10 years of age in some embodiments (*e.g.*, 3-8 years of age). Shopping cart **100** includes a handle **105** to allow children to push the cart. Wheels **108** allow children to easily move the shopping cart **100**. A container **110** in the form of a basket is adapted to hold scannable or non-scannable shopping items, or other toys selected by the child. Scannable toy items **95** are in the container **110**. A control console **120** is near the handle **105** and provides access to the interactive features of shopping cart **100**.

[0023]   While the illustrated shopping toy **99** embodiment is illustrated as having a shopping cart, it is understood that other embodiments are also possible. The shopping toy **99** according to embodiments of the invention may include any suitable container. For example, in other embodiments, instead of a shopping cart, the shopping toy can include a shopping basket without wheels that a person could carry with the person's hands.

[0024]   Figure 2 illustrates an embodiment of a control console **120**. Control console **120** includes a speaker **200** for providing audio output. While any suitable audio outputs can be produced, the audio outputs provided by this specific embodiment include sound effects, music, and speech. The audio output can be generated by a digital (or analog) audio device that either produces sound or plays one or more pre-recorded audio phrases. The use of digital audio devices to play pre-recorded audio phrases or to generate sound is well known in the art. Additionally, volume switch **205** allows a child (or parent) to select an audio output volume from the speaker **200**.

[0025]   Character switch **210** is configured to receive input from a child during interactive play. To facilitate interaction with children, character switch **210** can be a durable figurine designed to attract a child's attention, such as an anthropomorphic tadpole ("Tad") or other cartoon-like character. To activate the character switch **210**, a child can toggle the character switch **210**.

[0026]   Mode switch **215** allows a child or parent to select one of a plurality of operating modes for the shopping cart **100**. The shopping cart **100** provides different educational activities depending upon the interactive operating mode selected by mode switch **215**. Exemplary modes include a game mode, a learn mode, and an explore mode. Operating code for any of these modes and for any other function described herein can be created by those of skill in the art and can be stored in a memory associated with the toy.

[0027]   In an example game mode, a child can shop for food items on a predetermined food list. The toy may ask a child to find food items. For example, the toy may say, "Let's make a fruit shake! My list says we need strawberries and bananas." If a correct item is

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scanned, the toy congratulates the child and encourages him/her to find a second item. If an incorrect item is scanned, the toy helps the child find the correct item by offering a clue about the color of the food. For example, the toy may say "the bananas are yellow". A button or other device may be pressed to receive a clue.

5   [0028]   In an exemplary learn mode, a child can scan any food item to hear the quantity of food objects in the food item (e.g., 3 bananas in a molded representation of 3 bananas). If the food item is scanned a second time, the toy can compare its quantity to the previous food item scanned. For example, if the child scans the bananas first, and then scans eggs (e.g., a plastic representation of five eggs in a single body) a second time, the toy will

10   say "we have more eggs than bananas."

       [0029]   In an exemplary explore mode, a child can scan any food item to hear the name of the food item and its quantity. If the food item is scanned again, the color, food group, and nutritional benefit and a fun fact about the food item can be played.

       [0030]   Scanner 220 resembles a handheld bar code scanner. Scanner 220 includes a

15   hand grip 220(a) and a scanning head 220(b), and is configured to operate in conjunction with shopping items, as discussed below. In some embodiments, scanner 220 can be stored in receptacle 225. An electrical cord 230 electrically and mechanically couples the scanner 220 to the shopping cart 100. Alternate embodiments may use wireless communications in place of the electrical cord 230.

20   [0031]   Figure 3 illustrates an embodiment of a scanner 220. Scanner 220 includes pressure sensitive switch 310 located at the tip of scanner 220. Pressure sensitive switch 310 can signal to the shopping cart 100 when a child attempts to scan either a scannable toy item such as a scannable shopping item or a non-scannable toy item. Whether or not the pressure sensitive switch 310 is depressed, RF identification unit 305 emits a radio frequency (RF)

25   scanning signal. RF identification unit 305 receives a response signal to the scanning signal when a scannable toy item containing a RF identification tag is brought within close physical proximity (e.g., less than one inch away from each other) to the RF identification unit 305. Physical contact between the scanner 220 and the scannable toy item is not necessary to scan the scannable toy item. The response signal is used by the RF identification unit 305 to

30   identify the item scanned. In some embodiments, the RF identification tag is a passive device that generates a response signal from the energy of the scanning signal. The design and use of RF identification tags to identify objects is well known in arts such as the art of electronic devices (e.g., as used in electronic identification badges). In an alternate embodiments,

scanner **220** can identify objects using an optical scanner, such as bar code readers, or other active or passive identification devices.

[0032]   Figure 4A illustrates a scannable toy item in the form of a shopping item **400**. The shopping item **400** can be used with the shopping cart **100**. Any suitable scannable toy item can be used in embodiments of the invention. Exemplary shopping items may be role-play toy items such as play food items, play household items (*e.g.*, mops, sponges, brooms), and play tools (*e.g.*, hammers, screwdrivers, drills, etc.). In other embodiments, scannable toy items need not be role-play toy items. For example, the scannable toy items could be blocks with letters, numbers, or colors on them. In these embodiments, a child may use these non-role play scannable toy items, and then can receive audio outputs in response to scanning.

[0033]   Shopping item **400** includes an RF identification tag (not shown) or other identification device embedded just below its surface at location **410**. When shopping item **400** is brought within close physical proximity of scanner **220**, RF identification unit **305** or other equivalent identification device identifies the shopping item **400**. The shopping cart **100** then outputs an audio response to the identification of the shopping item **400**. To help the user scan the shopping item **400**, location **410** is marked with distinctive logo. The logo serves as a target for the scanner **220**. The child may be prompted to scan the logo on the shopping item **400**.

[0034]   The appearance of shopping item **400** and location **410** facilitates educational enrichment. In one embodiment, shopping item **400** resembles a food item. Each food item may have one or more food objects. When a shopping item is scanned, the shopping cart **100** outputs audio that identifies the food item or attributes of the food item, such as nutritional information, or the shape or color of the food item. This embodiment introduces children to food names, nutritional information, shapes, and colors.

[0035]   Alternatively or additionally, shopping item **400** resembles a specific quantity of objects. For example, shopping item **400** is in the form of a single, unitary body, but includes a set of five objects **415**. Set **415** may resemble five food objects, for example five cupcakes. When a shopping item is scanned, the shopping cart **100** outputs audio identifying the quantity of objects. In further embodiment, each shopping item is associated with a number. This number may be written on the shopping item. The number is incorporated into the scanning logo at location **410**. These embodiments help children teach children to count and to associate the quantities of objects with the corresponding numbers.

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[0036]   In some embodiments, a group of scannable toy items may form a "play pack" that may or may not correspond to a particular theme. If the play pack does correspond to a particular theme, then various non-scannable toy items can be included in the play pack along with scannable toy items.

[0037]   The play packs can have any suitable theme. For example, a barbeque play pack may include scannable toy items such as ketchup, mustard, hot dog, bun, and chips. In a health and safety play pack, scannable toy items may include a toothbrush, toothpaste, comb, etc. In a tea party play pack, scannable toy items may include a tea pot, cups, cookies, finger sandwiches, etc. Other examples of play packs with examples of scannable and non-scannable toy items are included in Tables 1-3. Table 1 lists items in a basic grocery "packout" play pack that can come with a base shopping cart. Table 2 lists scannable and non-scannable toy items in a picnic play pack. Table 3 lists scannable and non-scannable toy items in a birthday play pack.

[0038]   Expansion packs of scannable toy items can be sold separately. In one embodiment, the audio outputs for the expansion sets are preprogrammed into a memory in the toy. If a parent purchases an expansion set, the phrases associated with the expansion set are automatically activated upon scanning an expansion set shopping item. In other embodiments, the audio outputs that correspond to the scannable toy items in each of these play packs may be included in a separate transferable information storage medium, instead of being in a memory in the shopping cart. Such play packs can be sold with the transferable information storage medium to form a kit. Examples of transferable information storage media include data cartridges.

[0039]

Table 1
SCANNABLE TOY ITEMS INCLUDED WITH BASE SHOPPING CART
1 white carton of milk
2 pink pork chops
3 yellow bananas
4 orange carrots
5 blue boxes of cereal
6 white eggs
7 red cherries
8 brown muffins
9 green peas
10 red strawberries

[0040]

Table 2	
SCANNABLE TOY ITEMS INCLUDED WITH PICNIC ACCESSORY PACK	NON-SCANNABLE TOY ITEMS INCLUDED WITH PICNIC ACCESSORY PACK
1 red slice of watermelon with seeds	checkered picnic cloth
2 yellow ears of corn	picnic basket
3 green apple juice boxes .	
4 ink cookies	
5 brown chicken legs	
6 purple grapes	

5

[0041]

Table 3	
SCANNABLE TOY ITEMS INCLUDED WITH BIRTHDAY ACCESSORY PACK	NON-SCANNABLE TOY ITEMS INCLUDED WITH BIRTHDAY ACCESSORY PACK
white birthday cake with holes for candles and Happy Birthday written on top (e.g., shaped like a star)	2 party noise makers (blowers)
a package of 5 green candles	5 non-scannable green candles
a birthday present with a yellow bow on top	
a package of red party hats	2 non-scannable party hats
a birthday banner	

[0042]   Figure 4B illustrates a set of ten shopping items 430 (corresponding to those listed in Table 1) configured for use in conjunction with the shopping cart 100. The shopping items of set 430 are arranged similarly to shopping item 400. Each shopping item of set 430 contains an RF identification tag or other identification device. In an embodiment, the shopping items of set 430 each contain a unique identification tag such that scanner 220 can differentiate between the shopping items of the set. Shopping cart 100 uses the unique identification associated with each shopping item of set 430 to output a specific audio response for each shopping item of set 430.

[0043]   Each shopping item of set 430 is associated with a different food. In a further embodiment, each shopping item of set 430 represents a specific quantity of a food. In this embodiment, set 430 contains shopping items representing quantities of food objects between one and ten. Further, each shopping item of set 430 is marked with a corresponding number as discussed above.

[0044]   Figures 5A and 5B illustrate schematic electrical diagrams of circuits that can be used with the shopping toy. In schematic 500, a control device 510 and an input data port 520 are coupled together, and they receive input signals from scanner 220, or other identification devices. In this embodiment, a serial data interface is used. However, other

embodiments may use other types of data interfaces. Additional input devices **530, 540,** and **550** including mode, volume and character switches are connected as shown. Control device **510** can be a microprocessor, a microcontroller, or any other type of electronic control circuit. In another embodiment, the control device **510** is a microcontroller including ROM memory

5   for storing program and compressed audio data, as well as an audio processor for decompressing and outputting audio data. In response to input signals and its control program, control device **560** produces audio outputs through amplifier and speaker **540.** In this example, the audio playback device may include the microcontroller, ROM memory, amplifier, and speaker.

10   **[0045]**   Figure 5B illustrates a schematic **570** of an electrical circuit to be used with a scanner **220** according to an embodiment of the invention. Schematic **570** includes a controller **570** connected with a output data port **580** for communicating with control device **510**, a pressure switch **585**, and an RF identification circuit **590.** In one embodiment, the control device **575** is a microcontroller including ROM memory for storing program data.

15   Control device **575** operates RF identification circuit **590** and communicates scanned identifications through the output data port **580.**

[0046]   Table 4 lists various audio responses that can be used with the shopping items listed in Table 1 and shown in FIG. 4(b), and with the shopping cart shown in FIG. 1. A figurine named "Tad" is sitting in the shopping cart. Lines 1 to 81 of the script describe the

20   audio responses played in different operating modes according to the input received. The Appendices in Table 4, located at lines 95 to the end, provides details of the specific audio phrases associated with each of the shopping items in each operating mode. In the script of Table 4, a "/" character is used to subdivide audio phrases into segments. Segments can be reused by many different phrases. Segmenting phrases into reusable segments minimizes the

25   amount of redundant audio information and, consequently, the memory storage required for the audio data.

[0047]   As mentioned above, various play packs can be used with the shopping cart. After scanning something from an accessory pack, the toy will expand its data to include items from that pack. In Table 4, audio scripts for grocery food item play pack (*i.e.,* a

30   packout play pack) are described in detail. Audio scripts for other items including picnic and birthday theme packs are described in U.S. Provisional Patent Application No. 60/346,456, filed on January 5, 2002, which is incorporated by reference herein for all purposes.

[0048]

Table 4		
Line	Action/Prompt	Audio/Response
1	IN ANY MODE:	
2	Turn the unit on	Hi! / It's Tad! (then go to appropriate mode script)
3	Scanner reads code or hits something	See LED blinking. Hear beep (as written in script below)
4		
5	EXPLORE MODE:	
6	Switch to this mode or press Tad to wake up	(Explore Intro Jingle) / Let's go shopping!
7	Press scanner to wake up	Go to appropriate line for scanning (either scannable toy item or not). Cycles through different facts, then starts at beginning again.
8	After first 10 seconds of inactivity	Let's go shopping! Scan a tag!
9	After second 10 seconds of inactivity	Scan a tag!
10	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
11		
12	Scan scannable toy item first time	See Appendix.
13	Scan scannable toy item second time	See Appendix.
14	Scan scannable toy item third time	See Appendix.
15	First scan of a non-scannable toy item	See Appendix.
16	Subsequent scans of non-scannable items	See Appendix.
17	Press Tad	Play Shopping Song.
18		
19		
20	LEARN MODE:	
21	Switch to this mode or press Tad to wake up	(Intro Jingle) / Let's shop and learn!
22	Press scanner to wake up	Go to appropriate line for scanning (either scannable toy item or not)
23	After first 10 seconds of inactivity	Let's shop and learn! Scan a tag!
24	After. second 10 seconds of inactivity	Scan a tag!
25	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
26		
27	Scan a Packout Item	See Appendix.
28	Scan a Birthday Item	See Appendix.
29	Scan a Picnic item	See Appendix.
30	First scan of anon-scannable toy item	See Appendix.
31	Subsequent scans of non-scannable items	See Appendix.
32	Press Tad	Play shopping song.
33		
34	GAME MODE:	
35	Switch to this mode or press Tad to wake up	(Game Intro jingle) (go to Prompt Line)
36	Prompt Line	Game prompt. See Appendix. Randomly select a prompt and randomly fill in items
37	Press scanner to wake up	(beep!) /Then go to Prompt Line
38		
39	If LIST PROMPT given:	
40	After first 10 seconds of inactivity in List Prompt Game	We need (item name) / and / (item name)! (or whatever has not been correctly scanned in)
41	After second 10 seconds of inactivity	Scan a tag!
42	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
43		
44	Scan correct item	(beep!) /(item name) /(correct sfx) / (positive phrase)
45	If scanned item completes list, then says	(Completion Phrase) / Press me when you're ready to shop some more! / (GO TO "GAME OVER" STATUS)

46	Scan wrong scannable toy item first and second times in List Prompt Game (count starts over after each correct scan)	(beep!) (item name) / Oops! (giggle) / We need / (item name)/ and /(item name). (Toy lists items not yet scanned correctly.) (A clue given for one or more of the incorrectly scanned items.)
47	Scan wrong scannable toy item third time	(beep!) (item name) / Want to shop some more? / Press me!/ (GO TO "GAME OVER" STATUS)
48	Scan a non-scannable toy item first and second times in List Prompt Game (count starts over after each correct scan)	(beep!) We're buying lots of things! / We need / (item name)/ and /(item name). (Toy lists items not yet scanned correctly.) (A clue given for one or more of the items incorrectly scanned items.)
49	Scan a non-scannable toy item third time	(beep!) We're buying lots of things! /Press me when you're ready to shop some more! (GO TO "GAME OVER" STATUS)
50	Press Tad first or second time before scanning all correct items in List Prompt Game (count starts over after each correct scan)	My list says/ we need / (item name)/ and /(item name). (Toy lists items not yet scanned correctly.) (A clue is given for one of the items not yet scanned correctly).
51	Press Tad third time before scanning all correct items	Press me when you're ready to shop some more!
52	"GAME OVER" STATUS - functions as in Explore Mode, except if Tad pressed, which starts a new game.	
53	Press Tad in "GAME OVER" STATUS	go to Prompt Line
54	Reminder Prompt: after first 10 seconds with Tad not being pressed in GAME OVER STATUS (this is not an inactivity prompt - this is a reminder prompt to play the game. So only refers to TAD not being pressed)	Want to shop some more? Press me!
55	Reminder Prompt #2: after second 10 seconds with Tad not being pressed GAME OVER STATUS	Press me when you're read to shop some more!
56	STATUS: Inactivity Prompt in GAME OVER	
57	After first 10 seconds of inactivity	Want to shop some more? Press me
58	After second 10 seconds of inactivity	Press me when you're ready to shop some more!
59	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
60		
61	If MYSTERY PROMPT given:	
62	After first 10 seconds of inactivity in Mystery Prompt Game	Repeats Prompt
63	After second 10 seconds of inactivity	Scan a tag!
64	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
65		
66	Scan correct item	(beep!) /(item name) /(correct sfx) / (positive phrase)
67	If scanned item completes list, then says:	(Completion Phrase) / Press me when you're ready to shop some more! (GO TO "GAME OVER" STATUS)
68	Scan wrong scannable toy item first and second times in Mystery Prompt Game	(beep!) (item name) /Oops! (giggle) / (appropriate clue for the item)
69	Scan wrong scannable toy item third time	(beep!) (item name) / Want to shop some more? / Press me!/ (GO TO "GAME OVER" STATUS)
70	Scan a non-scannable toy item first and second times in Mystery Prompt Game	(beep!) We're buying lots of things! / (appropriate clue for the item)
71	Scan a non-scannable toy item third time	(beep!) We're buying lots of things! /Press me when you're ready to shop some more! (GO TO "GAME OVER" STATUS)

72	Press Tad first or second time before scanning all correct items in Mystery Prompt Game	(appropriate clue for the item)
73	Press Tad third time before scanning all correct items	Press me when you're ready to shop some more!
74	"GAME OVER" STATUS - functions as in Explore Mode, except if Tad pressed, which starts a new game.	
75	Press Tad in "GAME OVER" STATUS go to Prompt Line	
76	Reminder Prompt: after first 10 seconds with Tad not being pressed in GAME OVER STATUS (this is not an Inactivity prompt - this is a reminder prompt to play the game. So only refers to Tad not being pressed)	Want to shop some more? Press me!
77	Reminder Prompt #2: after second 10 seconds with Tad not being pressed in GAME OVER STATUS	Press me when you're ready to shop some more!
78	Inactivity Prompt in GAME OVER STATUS:	
79	After first 10 seconds of inactivity .	Want to shop some more? Press me!
80	After second 10 seconds of Inactivity	Press me when you're ready to shop some more!
81	After third 10 seconds of inactivity	Thanks for learning! / Bye bye!
82-94	Reserved for music and sound effects	
95	**PACKOUT APPENDIX**	
96	APPENDIX PACKOUT-A	
97	EXPLORE MODE SCANNING	
98	Item Name/ scan number Audio Response	
99	Milk - first scan	(beep) One / carton of / white l milk! / (Tad expression)
100	Milk - second scan	(beep) Milk! / This / milk / comes from a / cowl / Did you know that / milk/ from a yak is / pink! (Giggle)
101	Milk - third scan	(beep) Milk! Milk /has lots of / calcium!
102	Milk - fourth scan	(beep) Milk! / You build strong / bones/ by drinking/ milk!
103	Pork Chops - first scan	(beep) two / pink / pork chops! / (Tad Expression)
104	Pork Chops - second scan	(beep) pork chops! / Pork chops / ham, and bacon all come from a/ pig!
105	Pork Chops - third scan	(beep) pork chops! / Pork chops / have lots of / protein!
106	Pork Chops - fourth scan	(beep) pork chops! / You build strong / muscles / by eating /Pork Chops!
107	Bananas - first scan	(beep) Three / yellow / bananas! (Tad Expression)
108	Bananas - second scan	(beep) Bananas! / Bananas / grow on plants / that can be as tall as a two story house!
109	Bananas - third scan	(beep) Bananas! / Bananas / are / fruit! / and there fun to eat!
110	Bananas - fourth scan	(beep) Bananas / are good. for your / muscles! / Especially / when you're exercising!
111	Carrots - first scan	(beep) Four / orange / carrots!/ ad expression)
112	Carrots - second scan	(beep) carrots! / Carrots I make good noses for snowmen!
113	Carrots - third scan	(beep carrots! / carrots / are / a vegetable)
114	Carrots - fourth scan	(bee) carrots / help you see / especially / at night
115	Cereal - first scan	(beep) Five / blue/ boxes of /cereal! (Tad expression)
116	Cereal - second scan	(beep) Cereal! I Sometimes I like to eat my I cereal / with / milk: / Sometimes I like to eat my I cereal / plain. /How about you?
117	Cereal - third scan	(beep) Cereal! / Cereal / is / a grain!
118	Cereal - fourth scan	(beep) Cereal / gives you energy!
119	Eggs - first scan	(beep) Six / white / eggs! (Tad expression)
120	Eggs - second scan	(beep) Eggs! / Most / eggs / are / white!/ But some/ are / brown / or / blue / or / green! / Wow!
121	Eggs - third scan	(beep) Eggs! / Eggs /have lots of / protein!
122	Eggs - fourth scan	(beep) Eggs /You build strong / muscles / by eating / eggs!
123	cherries - first scan	(beep) Seven / red / cherries! (Tad expression)
124	cherries - second scan	(beep) Cherries! /Cherries / have pits inside. / Pits are big seeds. / Wow!
125	cherries - third scan	(beep) Cherries! /Cherries / are / fruit!

126	cherries - fourth scan	(beep) Cherries /help owees and cuts get better fast!
127	muffins - first scan	(beep) Eight / brown /muffins! (Tad expression)
128	muffins - second scan	(beep) Muffins! / Bran / muffins / are my favorite! / yummy !
129	muffins - third scan	(beep) Muffins! /Muffins / are / a grain!
130	muffins - fourth scan	(beep) Muffins / give you energy!
131	peas - first scan	(beep)Nine / green / peas! (Tad expression)
132	peas - second scan	(beep) Peas. / Peas / grow / in a pod. / There are usually / 3 / peas/ in a pod.
133	peas - third scan	(beep) Peas I /Peas / are / a vegetable!
134	peas - fourth scan	(beep) Peas /help owees and cuts get better fast!
135	strawberries - -first scan	(beep) Ten / red / strawberries! (Tad expression)
136	strawberries - second scan	(beep) Strawberries / Strawberries/ have 200 seeds on the outside! Wow!
137	strawberries - third scan	(beep) Strawberries! /Strawberries / are / fruit!
138	strawberries - fourth scan	(beep) Strawberries /help owees and cuts get better fast!
139		
140	APPENDIX PACKOUT-B	
141	TAD EXPRESSIONS FOR EXPLORE MODE	
142	"I like /(item name)!"	
143	"I'm glad we're buying I (item name)!"	
144	"Yumm!"	
145	giggle	
146		
147		
148	APPENDIX PACKOUT-C	
149	EXPLORE AND LEARN MODE NON-SCANNABLE TOY ITEMS	
150	Plays one of the following randomly:	(beep) Good choice!
151		(beep) Will it fit in the cart?
152		(beep) Let's get it!
153		(beep All right!
154		(beep) Super!
155		
156		
157	APPENDIX PACKOUT-D	
158	LEARN MODE SCANS	
159	Item Name/scan number	Audio Response (counting will be done to background tune)
160	Cartons of / milk - first scan	(beep) One / carton of / milk! / (pause) / one! / (positive phrase)
161	Cartons of / milk - second scan	(beep) milk! / We only have / one/ carton of / milk.
162	pork chops - first scan	(beep) Two / pork chops! / Let's count to /two! / (pause) I one! / two / (positive phrase)
163	pork chops second scan (if greater quantity has been scanned just before)	(beep) Two I pork chops! / we have / fewer / pork chops/ than / (item name scanned just before)
164	pork chops second scan (if smaller quantity has been scanned just before)	(beep) Two / pork chops! / we have / more / pork chops/ than / (item name scanned just before)
165	pork chops second scan	(beep) Two / pork chops! / one / for you and /one / for me!
166	Bananas - first scan	(beep) Three / bananas! / Let's count to / three! / (pause) I one / two / three/ (positive phrase)
167	Bananas - second scan (if greater quantity has been scanned just before)	(beep) Three / bananas! / we have / fewer / bananas / than / (item name scanned just before)
168	Bananas - second scan (if smaller quantity has been scanned just before)	(beep) Three / bananas! / we have I more / bananas / than / (item name scanned just before)
169	Bananas - second scan	(beep) Three / bananas! / we have / fewer / bananas / than / (higher quantity item name)
170	Carrots - first scan	(beep) Four/ carrots! / Let's count to / four! / (pause) / one / two I three / four/ (positive phrase)

171	Carrots - second scan (If greater quantity has been scanned just before)	(beep) Four / carrots! / we have / fewer / carrots / than / (item name scanned just before)
172	Carrots - second scan (if smaller quantity has been scanned just before)	(beep) Four / carrots! / we have / more / carrots / than / (item name scanned just before)
173	carrots - second scan	(beep) Four / carrots! / Two/ for you and /Two / for me!
174	Boxes of cereal - first scan	(beep) Five / boxes of /cereal! / Let's count to / five! / (pause) / one / two / three / four/ five /(positive phrase)
175	Boxes of cereal - second scan (if greater quantity has been scanned just before	(beep) five / boxes of / cereal! / we have / fewer / boxes of / cereal / than / (item name scanned just before)
176	Boxes of cereal - second scan (if smaller quantity has been scanned just before)	(beep) five / boxes of / cereal! / we have / more / boxes of / cereal / than / (item name scanned just before)
177	Boxes of cereal - second scan	(beep) five I boxes of /cereal! / we have / more / boxes of / cereal I than I (lesser quantity item name)
178	Eggs	(beep) Six / eggs! / Let's count to / six! / (pause) / one / two / three / four/ five / six / (positive phrase)
179	eggs - second scan (if greater quantity has been scanned just before)	(beep) six I eggs! / we have / fewer / eggs / than / (item name scanned just before)
180	eggs - second scan (if smaller quantity has been scanned just before)	(beep) six eggs! / we have / more / eggs / than / (item name scanned just before)
181	eggs - second scan	(beep) six / eggs! / Three / for you and / three / for me!
182	cherries	(beep) Seven / cherries! / Let's count to / seven! / (pause) / one / two / three / four/ five / six / seven /(positive phrase)
183	cherries - second scan (if greater quantity has been scanned just before)	(beep) seven / cherries! / we have / fewer / cherries than / (item name scanned just before)
184	cherries - second scan (if smaller quantity has been scanned just before)	(beep) seven / cherries! / we have / more / cherries / than / (item name scanned just before)
185	cherries - second scan (if nothing or Birthday Pack item has been scanned just before)	(beep) seven / cherries! / we have / more / cherries / than / (lesser quantity item name)
186	muffins	(beep) Eight / muffins! / Let's count to / eight! / (pause) / one / two / three / four/ five / six / seven / eight / (positive phrase).
187	muffins - second scan (if greater quantity has been scanned just before)	(beep) eight / muffins! / we have / fewer / muffins / than / (item name scanned just before)
188	muffins - second scan (if smaller quantity has been scanned just before)	(beep) eight I muffins! / we have / more / muffins / than / (item name scanned just before)
189	muffins - second scan (if nothing or Birthday Pack Item has been scanned just before)	(beep) eight / muffins! / Four / for you and / four / for me!
190	peas	(beep) Nine / peas! / Let's count to / nine! / (pause) / one / two / three / four/ five / six / seven / eight / nine / (positive phrase)
191	peas - second scan (if greater quantity has been scanned just before)	(beep) nine / peas! / we have / fewer / peas / than / (item name scanned just before)
192	peas - second scan (if smaller quantity has been scanned just before)	(beep) nine / peas! / we have / more / peas / than / (item name scanned just before)
193	peas - second scan	(beep) nine / peas! / we have / more / peas / than / (lesser quantity item name)
194	strawberries	(beep) Ten / strawberries! / Let's count to / ten! / (pause) / one / two / three / four/ five / six / seven / eight / nine / ten / (positive phrase)

15

195	strawberries - second scan (if greater quantity has been scanned just before)	(beep) ten / strawberries! / we have / fewer / strawberries / than / (item name scanned just before)
196	strawberries - second scan (if smaller quantity has been scanned just before)	(beep) ten / strawberries! / we have / more / strawberries / than / (item name scanned just before)
197	strawberries - second scan	(beep) ten / strawberries! / Five / for you and /five / for me!
198		
199 .		
200	Appendix PACKOUT-E	
201	Learn Mode Positive Phrases	
202	Yeah!	
203	all right!	
204	great!	
205	super!	
206	I like / counting to / (quantity of last item scanned)!	
207		
208		
209	Appendix PACKOUT-F	
210	Game Mode Prompts and Completion Phrases	

211	Random selected prompts.	Randomly selects items to insert into prompt:	Completion Phrases
212	LIST PROMPTS:		
213	Let's make I a fruit shake! / My list says / we need / (item name) / and /(item name)	bananas, cherries, strawberries	Now we have everything to make /a fruit shake! / It's going to be delicious!
214	Let's make breakfast, I need / (item name) and / (item name)	milk, bananas, cereal, eggs, muffins, strawberries	Now we have everything to make breakfast! / I can hardly wait to eat!
215	Let's make /dinner! / My list says we need (item name) and (item name)	milk, pork chops, carrots, cherries, peas, and strawberries	Now we have everything to make dinner! / It's going to be delicious!
216	Let's make /a snack! / My list says we need (item name) and (item name)	milk, bananas, carrots, cherries, peas, and strawberries	Now we have everything to make a snack! / I can hardly wait to eat!
217	Let's buy / vegetables! / My list says we need (item name) and (item name)	carrots, peas	We bought a lot of vegetables!
218	Let's buy / fruit! I My list says I we need / (item name) /and /(item name)	bananas, cherries, strawberries	We bought a lot of fruit!
219	Let's buy / white/ things!"	milk, eggs	We bought a lot of / white / things!
220	Lets buy / red/ things !"	cherries, strawberries	We bought a lot of / red / things!
221	*MYSTERY PROMPTS and CLUES:*		
222	Milk:		
223	I forgot to buy / something. Can you help me? It / comes from a / cow	answer - milk	Thank you! / That's what I forgot! / milk!
224	first clue: I forgot to buy / something / white!		
225	second clue: I forgot to buy / milk!		
226	Pork Chops:		
227	1 forgot to buy / something. Can you help me? It / comes from a pig!	answer - pork chops	Thank you! / That's what I forgot! /pork chops
228	first clue: I forgot to buy / something / pink!		
229	second clue: I forgot to buy / pork chops!		
230	Bananas:		

231	1 forgot to buy / something. Can you help me? They / grow on plants!	answer - bananas	Thank you! / That's what I forgot! / bananas
232	first clue: I forgot to buy / something / yellow		
233	second clue: I forgot to buy / bananas		
234	Carrots:		
235	I forgot to buy / something. Can you help me? They / make good noses for snowmen!	answer - carrots	Thank you! / That's what I forgot! / carrots
236	first clue: I forgot to buy / something / orange		
237	second clue: I forgot to buy / carrots		
238	Cereal:		
239	I forgot to buy / something. Can you help me? It / is / a grain!	answer - cereal	Thank you! / That's what I forgot! / cereal
240	first clue: I forgot to buy / something / blue		
241	second clue: I forgot to buy / cereal		
242	Eggs:		
243	I forgot to buy / something. Can you help me? They / have lots of / protein!	answer-eggs	Thank you! /That's what I forgot! /eggs
244	first clue: I forgot to buy / something / white!		
245	second clue: I forgot to buy /eggs		
246	Cherries:		
247	I forgot to buy / something. Can you help me? They / have pits inside!	answer - cherries	Thank you! / That's what I forgot! / cherries
248	first clue: I forgot to buy / something /red		
249	second clue: I forgot to buy /cherries		
250	Muffins:		
251	I forgot to buy / something. Can you help me? They / give you energy !	answer-muffins	Thank you! / That's what I forgot /muffins
252	first clue: I forgot to buy / something /brown		
253	second clue: I forgot to buy /muffins		
254	Peas:		
255	I forgot to buy / something. Can you help me? The / grow in a pod!	answer -peas	Thank you! / That's what I forgot! / peas
256	first clue: I forgot to buy / something /green		
257 .	second clue: I forgot to buy /peas		
258	Strawberries:		
259	I forgot to buy / something. Can you help me? They / have 200 seeds on the outside!	answer-strawberries	Thank you / That's what I forgot / strawberries
260	first clue: I forgot to buy / something / red		
261	second clue: I forgot to buy / strawberries		
262			
263			
264	APPENDIX PACKOUT-G		
265	GAME MODE POSITIVE PHRASES		
266	yeah		
267	alright		
268	great		
269	super		
270			
271	APPENDIX PACKOUT-H		
272	GAME MODE. ITEM NAMES AND LIST PROMPT CLUES		

273	Item Name	Clue
274	milk	The / milk/ carton is / white
275	pork chops	The / pork chops / are / pink
276	bananas	The / bananas / are / yellow
277	carrots	The / carrots / are / orange
278	cereal	The I boxes of / cereal / are / blue
279	eggs	The / eggs / are / white
280	cherries	the / cherries / are / red
281	muffins	The / muffins / are / brown
282	peas	The / peas / are / green
283	strawberries	The / strawberries / are / red

[0049]   Figure 6 illustrates a flowchart **600** of an exploration mode of operation for the shopping cart **100**. In exploration mode, a child can learn facts about shopping items. The shopping cart **100** recites the name of a shopping item the first time it is scanned. The

5   shopping cart **100** recites additional information about a shopping item upon subsequent scans. Table 4 contains an example script specifying the audio output in response to input. Lines 5 to 17 of the script in Table 4 further specify the audio responses for the exploration mode illustrated by flowchart **600**.

[0050]   At step **610**, the shopping cart **100** waits for an object to be scanned by

10   scanner **220**. Once an item has been scanned, at step **620** the shopping cart **100** determines whether the scanned item is shopping item containing an electronic identification, or a non-scannable toy item. A non-scannable toy item is any object not containing an RF identification tag configured for scanner **220**. In step **620**, a non-scannable toy item is detected when the pressure switch **310** on scanner **220** is activated without simultaneous

15   reception of a response signal by RF identification unit **305**. Shopping items are detected when RF identification unit **305** receives a response signal from an RF identification tag.

[0051]   After scanning a scannable toy item, step **650** identifies the scanned shopping item. In one embodiment, the shopping item is identified by the unique response signal emitted by the identification tag embedded in a shopping item. Step **660** selects one of a

20   plurality of phrases to be played for the shopping item. Lines 97 to 138 of the script in Table 4 list example audio responses for each shopping item. In this embodiment, there are four unique audio phrases associated with each shopping item. In a further embodiment, step **660** selects each of the audio phrases associated with a shopping item sequentially. Following the selection of the final audio phrase associated with a shopping item, a subsequent scan of the

25   same item will result in the selection of the first audio phrase. Step **670** outputs the selected audio response. Following completion of step **670**, step **610** waits for the next scan.

[0052]   In response to a non-scannable toy item, step **630** selects a phrase to be played for non-scannable toy items. A plurality of example phrases associated with non-scannable

toy items is listed at lines 149 to 154 of the script in Table 4. In this example, the audio response for non-scannable toy items is designed to be appropriate for an unknown object and encourage further play with the shopping cart **100**. Phrases are selected randomly at step **630**. Step **640** outputs the selected audio response. After completing step **640**, step **610** waits

5   for the next scan.

[0053]   The interactive responses for non-scannable toy items allow a child to incorporate other objects, such as a favorite toy or a pet dog, into their use of shopping cart **100**. Additionally functionality in exploration mode includes the playing of a shopping song when the character switch **210** is activated.

10   [0054]   Figure 7 illustrates a flowchart **700** of a learning mode of operation for the shopping cart **100**. An embodiment of the learning mode teaches counting, numbers, and the relationships between numbers and quantities. In this embodiment, each shopping item is associated with a quantity and a number. Lines 20 to 32 of the script in Table 1 further specify the audio responses for the learning mode illustrated by flowchart **700**.

15   [0055]   At step **710**, the shopping cart **100** waits for an object to be scanned by scanner **220**. Once an item has been scanned, at step **720** the shopping cart **100** determines whether the scanned item is a shopping item containing an electronic identification, or a non-scannable toy item. A non-scannable toy item is any object not containing an RF identification tag configured for scanner **220**. In step **720**, a non-scannable toy item is

20   detected when the pressure switch **310** on scanner **220** is activated without simultaneous reception of a response signal by RF identification unit **305**. Shopping items are detected when RF identification unit **305** receives a response signal from an RF identification tag.

[0056]   In response to a scannable toy item, step **750** identifies the scanned shopping item. In some embodiments, the shopping item is identified by the unique response signal emitted by the identification tag embedded in a shopping item. Step **760** selects one of a

25   plurality of phrases to be played for the shopping item. Lines 158 to 197 of the script in Table 4 list example audio responses for each shopping item. In this embodiment, there are four unique audio phrases associated with each shopping item. The first phrase associated with each shopping item identifies the scanned item and the numeric quantity associated with

30   the item. The phrase also counts up to the number associated with the shopping item to reinforce the numerical relationships and to teach counting skills. The second phrase associated with a scanned item relates the quantity of the shopping item to the quantity of the previous shopping item. One of a set of alternate phrases is selected based on whether the scanned shopping item is greater than or less than the previously scanned shopping item.

[0057]   Step **760** selects each of the audio phrases associated with a shopping item sequentially. Following the selection of the final audio phrase associated with a shopping item, a subsequent scan of the same item will result in the selection of the first audio phrase. Step **770** outputs the selected audio response. Following completion of step **770**, step **710** waits for the next scan.

[0058]   In response to a non-scannable toy item, step **730** selects a phrase to be played for non-scannable toy items. A plurality of example phrases associated with non-scannable toy items is listed at lines 149 to 154 of the script in Table 4. In this example, the audio response for non-scannable toy items is designed to be appropriate for an unknown object and encourage further play with the shopping cart **100**. Phrases are selected randomly at step **730**. Step **740** outputs the selected audio response. Following completion of step **740**, step **710** waits for the next scan.

[0059]   Figures 8A, 8B, and 8C illustrate flowcharts of a game mode of operation for an embodiment of an interactive shopping role-play toy. An embodiment of the game mode presents two different shopping theme games designed to reinforce the information learned from the other two modes. A first shopping game of an embodiment of the game mode is a "mystery" game in which the child is asked to scan an item identified by one or more clues. The clues can be based on information taught in the other operating modes. A second shopping game of an embodiment of the game mode is a "shopping list" game in which a child is asked to scan several items as part of a "shopping list." Lines 34 to 81 of the script in Table 4 further specify the audio responses for the game mode.

[0060]   In Figure 8A, at step **805**, the game mode is started. The game mode is started either by initially moving the mode switch **215** into the game mode position, or by activating character switch **210** when mode switch **215** is already in the game mode position. At step **810**, one of the games of the game mode is selected. This selection can be random. Step **815** identifies the game selection and in response, the mystery game or the shopping list game is started at step **820** or **825**, respectively.

[0061]   Figure 8B illustrates a flowchart of the mystery game. Lines 221 to 271 of the script in Table 4 further specify the audio responses for the mystery game mode. At step **830**, a mystery item is selected. This selection can be random. Based on the mystery item selected, step **835** plays a clue associated with the mystery item. Step **840** waits for an item to be scanned. If nothing is scanned after a predetermined amount of time, one or more phrases may be played to prompt the user. Further periods of inactivity may result in returning the start mode **805**.

[0062]   Once an item has been scanned, step **845** identifies the scanned shopping item
and determines if it matches the selected mystery item. If the correct item has been scanned,
a completion phrase is played at step **850** and the game returns to start mode **805**. If the
incorrect item is scanned, step **855** determines whether this is the third incorrect scan of the
game. If three incorrect scans are made, step **860** returns to start mode **805**. If this is the first
or second incorrect scan, step **865** selects and plays a hint as indicated in Table 4, and returns
to step **840** to wait for the next scanned item.

[0063]   Figure 8C illustrates a flowchart of the shopping list game. Lines 210 to 261
of the script in Table 4 further specify the audio responses for the shopping list game mode.
At step **870**, a pair of shopping list items are selected and added to a shopping list. This
selection can be random. Based on the shopping list items selected, step **875** plays a phrase
requesting the selected shopping items. Step **880** waits for an item to be scanned. If nothing
is scanned after a predetermined amount of time, one or more phrases may be played to
prompt the user. Further periods of inactivity may result in returning the start mode **805**.

[0064]   Once an item has been scanned, step **890** identifies the scanned shopping item
and determines if it matches one of the items on the items on the shopping list. If a correct
item has been scanned, step **900** determines whether all of the items on the shopping list have
been scanned. If the shopping list is not complete, step **885** removes the scanned item from
the shopping list and returns to step **880** to await a subsequent scan. If all of the items on the
shopping list have been scanned, a completion phrase is played at step **905** and step **915**
returns the game to start mode **805**.

[0065]   If the incorrect item is scanned, step **910** determines whether this is the third
incorrect scan of the game. If three incorrect scans are made, step **915** returns to start mode
805. If this is the first or second incorrect scan, step **90** plays the remaining shopping items
on the list as a hint, and returns to step **880** to wait for the next scanned item.

[0066]   · As noted above, The interactive shopping role-play toy can optionally be
expanded through the use of separately purchased expansion sets of additional shopping
items. Each expansion set of shopping items has a unique set of RF identification tags that
distinguish the expansion set from the shopping items included with the interactive shopping
role-play toy. A set of unique phrases can be associated with the expansion set. The phrases
can be preprogrammed into the interactive shopping role-play toy. Alternatively, additional
phrases may be added through the use of a slot (which may be associated with a data input
device) for an information storage medium, as discussed below.

21

[0067]   The interactive toy can optionally include a slot (not shown) for a transferable information storage medium (not shown) that is operatively coupled to the processor and memory unit. The slot can be cooperatively structured to receive the transferable storage medium in a removable manner. Any suitable transferable storage medium can be employed in the toy including, but not limited to, a data cartridge (*e.g.*, a flash memory cartridge), a disk, a tape or a memory stick. The transferable information storage medium can be used to provide code for new operating modes or new audio data (*e.g.*, new phrases or songs) to the toy. The transferable information storage medium may be purchased at a store, or may be created at the user's site by downloading new content from a personal computer or from the Internet.

[0068]   The toy can also form part of a system that provides the toy with new content if desired. For example, in some embodiments, a linker device can be used to transfer data (*e.g.*, new audio data or code for new operating modes) between the toy and a computer (*e.g.*, an Internet-enabled personal computer or server computer). The linker device can be any suitable linker device known to one skilled in the art, such as a wireless transceiver (*e.g.*, a radio frequency [RF] transceiver or an infra-red [IR] transceiver) or a data port (*e.g.*, a Universal Serial Bus [USB] data port). Such a data port enables a user to transfer data to, and from, the toy through a physical connection (*e.g.*, a data cable) between the toy and a client PC or the Internet. The inclusion of a linker device in the system results in an Internet-enabled toy. Additional details regarding such Internet-enabled embodiments can be found in U.S. Patent Application No. 09/632,424, filed on August 4, 2000. This U.S. Patent Application is herein incorporated by reference in its entirety for all purposes.

[0069]   Embodiments of the invention have a number of advantages. First, embodiments of the invention are more interactive than, for example, ordinary non-electronic play shopping cart toys. Second, embodiments of the invention can teach a child in various ways and about multiple subjects. For example, the audio script above indicates that the shopping toys according to embodiments of the invention can be used to teach about numbers, food (*e.g.*, food facts, food recognition), and colors substantially simultaneously. These and other subjects can be taught to a child while the child uses the child's kinesthetic ability, and auditory and visual senses. Using these three modes of interaction enhances and reinforces learning. Third, using embodiments of the invention, children can be introduced to or develop: language development (children are introduced to food names, food groups, number names, and the connection between numbers and quantities); reasoning skills (basic number skills are important building blocks for more complex mathematical concepts);

exploration and creativity (children are encouraged to explore numbers, quantities, and counting as they engage in shopping role-play, and shopping role-play and character interaction encourages imaginative and creating play); cognitive development (following simple directions helps children develop cognitive skills and games help develop memory

5   and reasoning skills and encourage learning play); and motor skills (scanning food items helps develop gross motor skills).

[0070]   The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding equivalents of the features shown and described, or portions

10   thereof, it being recognized that various modifications are possible within the scope of invention the claimed. For example, although audio playback devices are described in detail herein, it is understood that embodiments of the invention could use display devices (*e.g.*, an LCD screen) as well. Moreover, one or more features of embodiments of the invention may be combined any one of more features of other embodiments of the invention without

15   departing from the spirit and scope of the invention.

WHAT IS CLAIMED IS:

1   1. A toy comprising:

2   (a) a scannable toy item;

3   (b) an electronic scanner configured to identify the scannable toy item when

4 the electronic scanner is brought within physical proximity to the scannable toy item; and

5   (c) an audio playback device electronically coupled to the electronic scanner,

6 wherein the audio playback device is configured to play an audio output that is uniquely

7 associated with the scannable toy item.

1   2. The toy of Claim 1, wherein the audio playback device is configured to

2 play a first unique audio output in response to an initial identification of the scannable toy

3 item by the electronic scanner and to play a second unique audio output in response to a

4 subsequent identification of the scannable toy item by the electronic scanner.

1   3. The toy of Claim 1, wherein the audio playback device is configured to

2 play a first audio output that requests a child to scan the scannable toy item before the child

3 has scanned the scannable toy item.

1   4. The toy of Claim 1, wherein the audio output describes an attribute of the

2 scannable toy item.

1   5. The toy of Claim 4, wherein the attribute of the scannable toy item is a

2 color.

1   6. The toy of Claim 4, wherein the attribute of the scannable toy item is a

2 shape.

1   7. The toy of Claim 4, wherein the attribute of the scannable toy item is a

2 number.

1   8. The toy of Claim 4, wherein the attribute of the scannable toy item is the

2 name of the shopping item.

1   9. The toy of Claim 4, wherein the scannable item is a food item and the

2 attribute is nutritional information associated with the food item.

1   10. The toy of Claim 1, wherein the scannable toy item includes an RF

2 identification tag corresponding to the unique electronic identification, and wherein the

3 electronic scanner includes an RF identification tag reader adapted to read the RF

4 identification tag.

1   11. The toy of Claim 1, wherein the electronic scanner further includes a

2 pressure switch in a scanning head portion, and wherein the audio playback device is

3 configured to play a generic audio acknowledgement after the pressure switch is activated.

1   12. The toy of Claim 1, wherein the audio output comprises at least one

2 unique audio output and at least one non-unique audio output.

1   13. The toy of Claim 1, wherein the toy has at least two of a learn mode, a

2 game mode, and an explore mode.

1   14. The toy of Claim 13, further comprising a mode switch configured to

2 change the operational mode of the toy.

1   15. The toy of Claim 1, further comprising a data input device electronically

2 coupled with the audio playback device and adapted to receive additional data for use by the

3 audio playback device.

1   16. The toy of Claim 1 wherein the scannable toy item is a scannable

2 role-play toy item.

1   17. The toy of Claim 1 further comprising a shopping cart, wherein the

2 scannable toy item is to be placed in the shopping cart.

1   18. The toy of Claim 15, wherein the data input device is a slot adapted to

2 receive a transferable information storage medium.

1   19. An toy, comprising:

2   (a) a container;

3   (b) a plurality of toy items, each toy item of the first plurality replicating a

4   shopping item;

5   (c) an input device adapted to uniquely identify each of the toy items; and

6   (d) an audio playback device adapted to play an audio output associated with

7   the identified toy item.

1   20. The toy of Claim 20, wherein the audio output is uniquely associated with

2   the identified toy item.

3   21. The toy of Claim 20, wherein the input device is configured to uniquely

4   identify a toy item when the toy item is within physical proximity of the input device.

1   22. The toy of Claim 22, wherein each toy item includes an RF identification

2   tag corresponding to a unique electronic identification;

3   and the input device includes a scanner comprising an RF identification tag

4   reader.

1   23. The toy of Claim 20, wherein the audio playback device includes a

2   memory preprogrammed with a first set of audio outputs associated with the first plurality of

3   toy items.

1   24. The toy of Claim 24, further comprising a second plurality of toy items,

2   each toy item of the second plurality replicating a shopping item; and

3   wherein the audio playback device is adapted to play an audio output

4   associated with the identified toy item selected from a second set of audio outputs associated

5   with the second plurality of toy items.

1   25. The toy of Claim 20 wherein the container is in the form of a shopping

2   cart or a shopping basket.

1   26. A kit comprising:

2   (a) a plurality of scannable toy items; and

3   (b) a plurality of RF identification tags respectively associated with the

4 plurality of scannable toy items,

5   wherein the RF identification tags are capable of being read by a scanner

6 comprising an RF identification tag reader.

1   27. The kit of claim 26 wherein the scannable toy items are food items

1   28. The kit of claim 26 further comprising a transferable information storage

2 medium comprising audio data corresponding to the plurality of scannable toy items.

1   29. The kit of claim 26 further comprising a data cartridge comprising audio

2 data corresponding to the plurality of scannable toy items.

1   30. A kit comprising:

2   (a) a plurality of scannable toy items;

3   (b) a plurality of identification tags respectively associated with the plurality

4 of scannable toy items; and

5   (c) a transferable information storage medium comprising code for audio

6 corresponding to the plurality of scannable toy items.

1   31. The kit of claim 30 wherein the plurality of identification tags comprise

2 bar codes.

1   32. The kit of claim 30 wherein the identification tags are RF identification

2 tags.

FIG. 1

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FIG. 2

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```
                           220

                  ┌─────────────────┐
                  │  ┌───────────┐  ││
                  │  │           │  ││
                  │  │  RF ID    │  ││
                  │  │  UNIT     │  ││
                  │  │           │  ││
                  │  │   305     │  ││
                  │  └───────────┘  ││
                  │                 ┘│
                  │                   │
                  │                 310
                  │  │
                  │  │
                  │  │
                  │  │
                  │  │
                  │  │
                  └──┘
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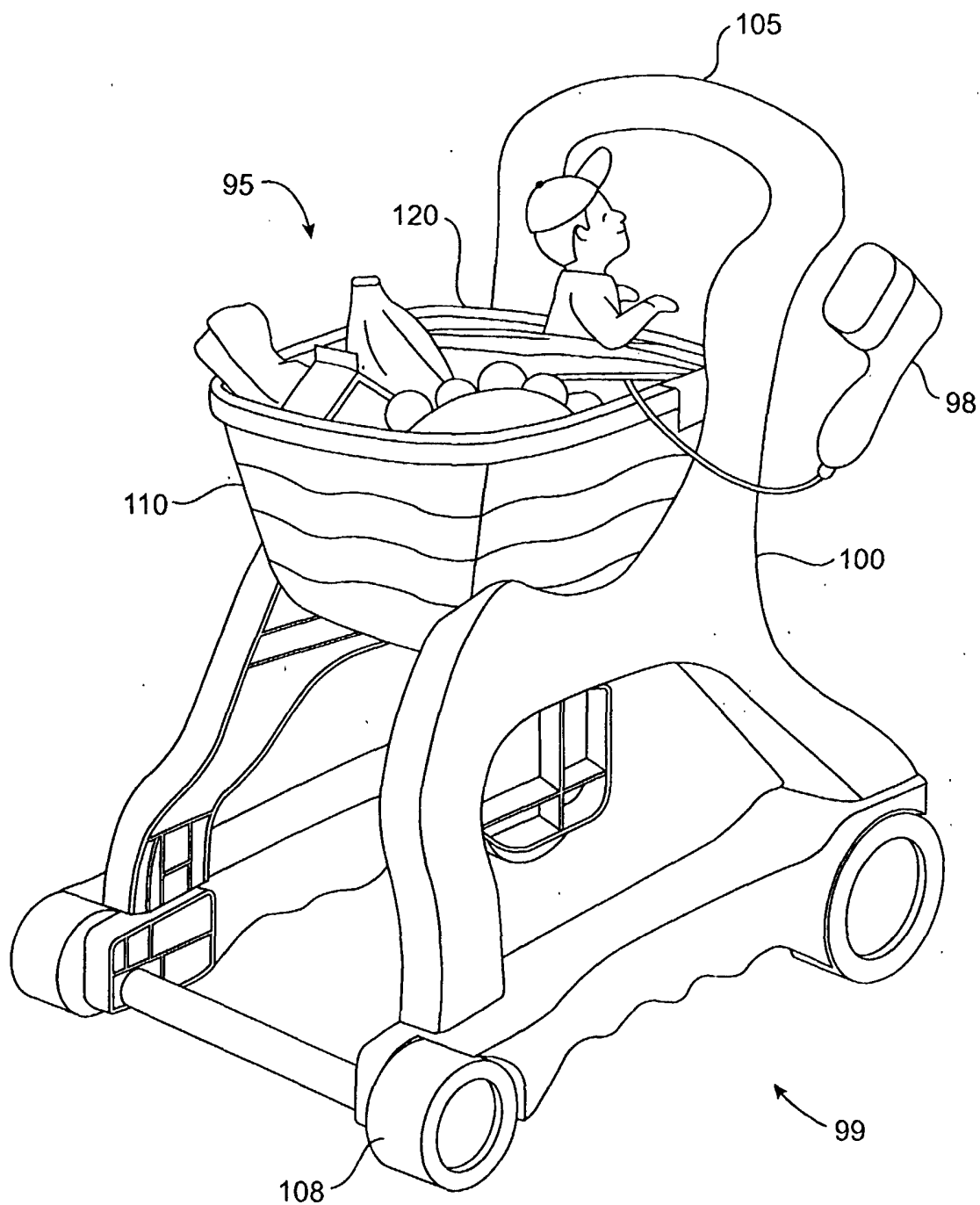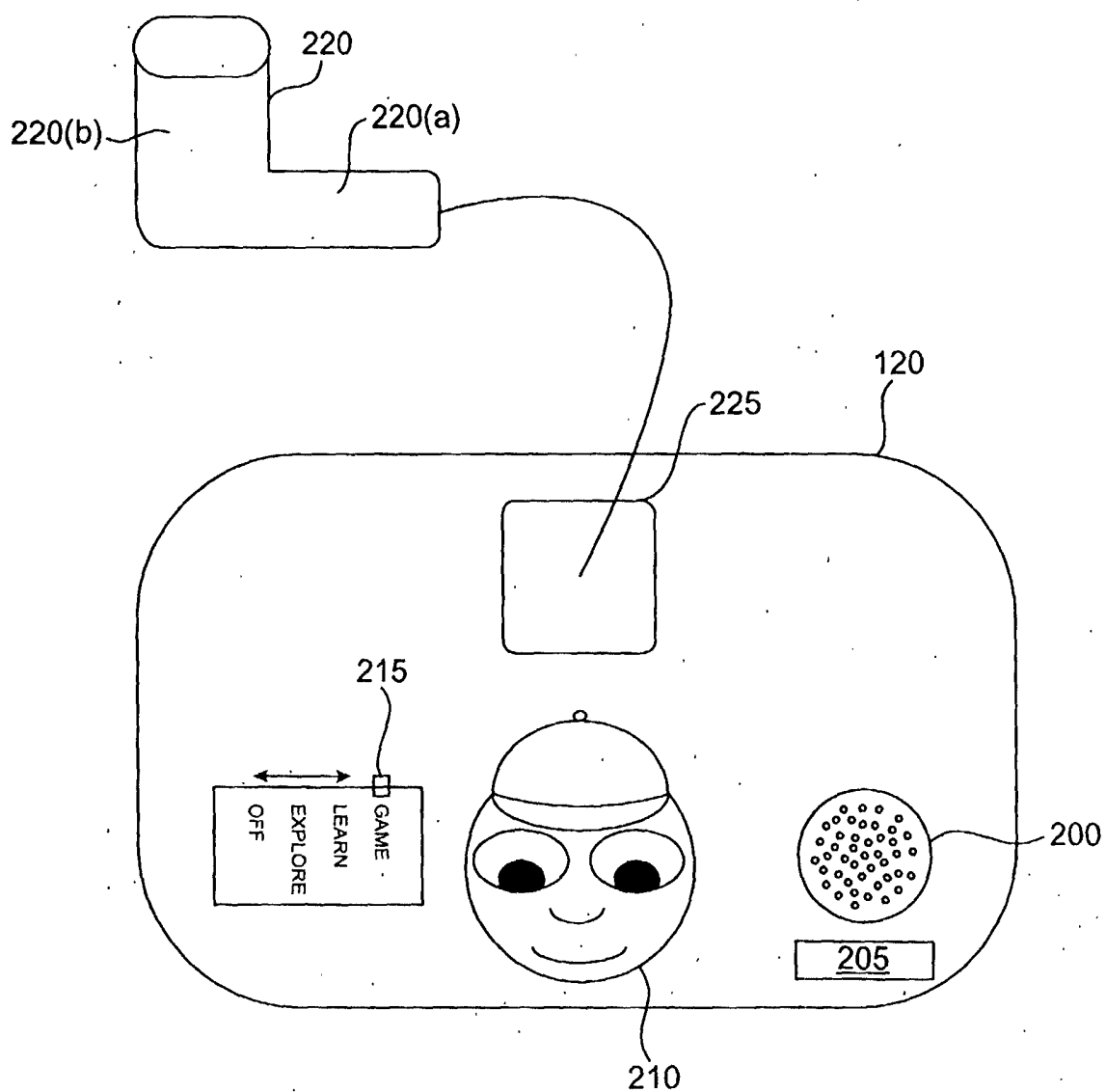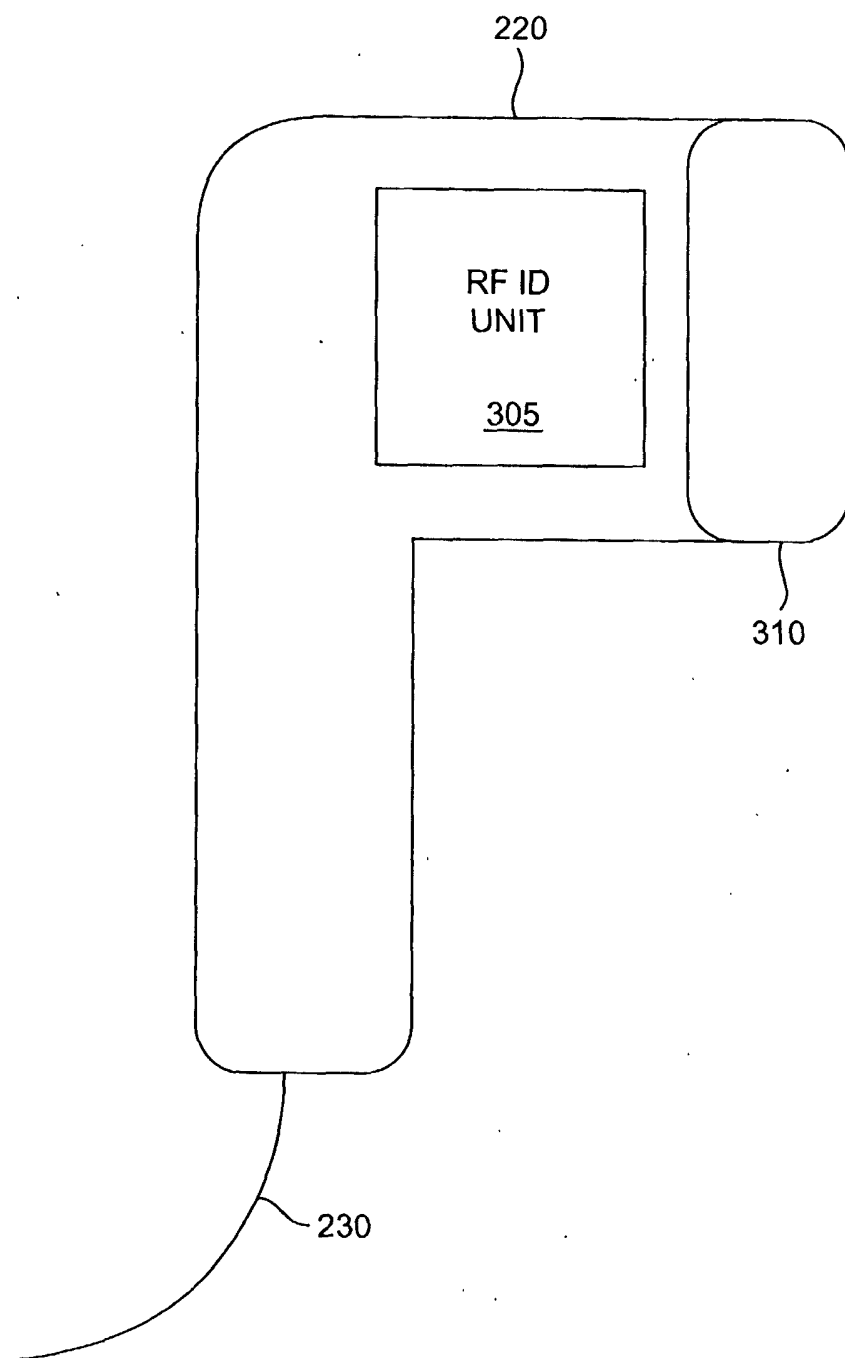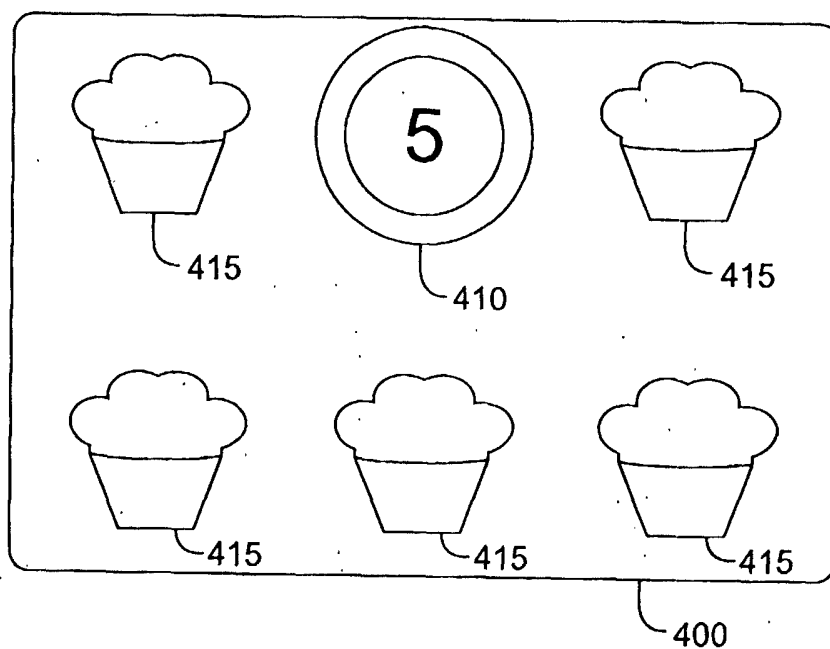
FIG. 3

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FIG. 4A

FIG. 4(b)

FIG. 5A

FIG. 5B

```
         ┌─610                                    ┌─640
┌─────────────────────┐                    ┌─────────────────────┐
│    Wait for scan    │◄───────────────────│ Play selected phrase│
└─────────────────────┘                    └─────────────────────┘
          │                                           ▲
          │                                           │
          ▼          ┌─620                            │      ┌─630
         ╱╲                                  ┌─────────────────────┐
        ╱  ╲                                 │  Select next phrase │
       ╱ Is item╲──────NO──────────────────►│                     │
       ╲scannable?╱                          └─────────────────────┘
        ╲  ╱
         ╲╱
          │
         YES
          │
          ▼          ┌─650
┌─────────────────────┐
│    Identify item    │
└─────────────────────┘
          │
          │
          ▼          ┌─660
┌─────────────────────┐
│  Select next phrase │
└─────────────────────┘
          │
          │
          ▼          ┌─670
┌─────────────────────┐
│ Play selected phrase│
└─────────────────────┘
```

FIG. 6

FIG. 7

FIG. 8A

```
┌─────────────────────────┐ ┐ 830
│    Select mystery item  │ ┘
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐ ┐ 835
│   Play clue for mystery │ ┘
│          item           │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐ ┐ 840
│     Wait for item scan  │ ┘
└─────────────────────────┘
            │
            ▼
        ◇ 845                              ┌─ 850
       ╱   ╲                      ┌─────────────────────────┐
      ╱ Is correct╲── YES ──────▶ │  Play completion phrase  │
      ╲ item scanned╱             └─────────────────────────┘
       ╲   ╱                                  │
        ◇                                     │
        │ NO                                  │
        ▼                                     │
        ◇ 855                                 ▼
       ╱   ╲                      ┌─────────────────────────┐
      ╱Is this the╲── YES ──────▶ │   Return to start mode  │
      ╲third wrong╱               └─────────────────────────┘
      ╲  scan   ╱                             └─ 860
        ◇
        │ NO
        ▼
┌─────────────────────────┐ ┐ 865
│   Play hint for mystery │ ┘
│          item           │
└─────────────────────────┘
```
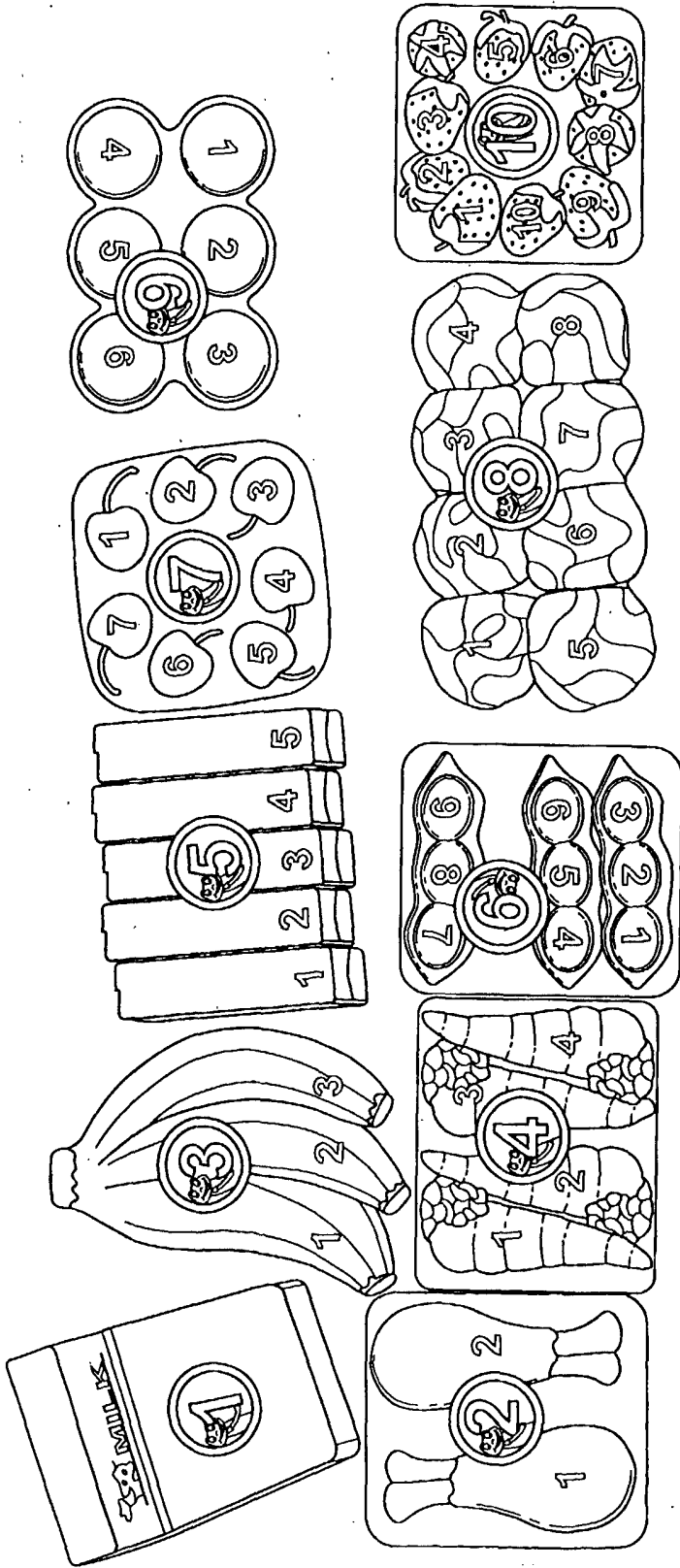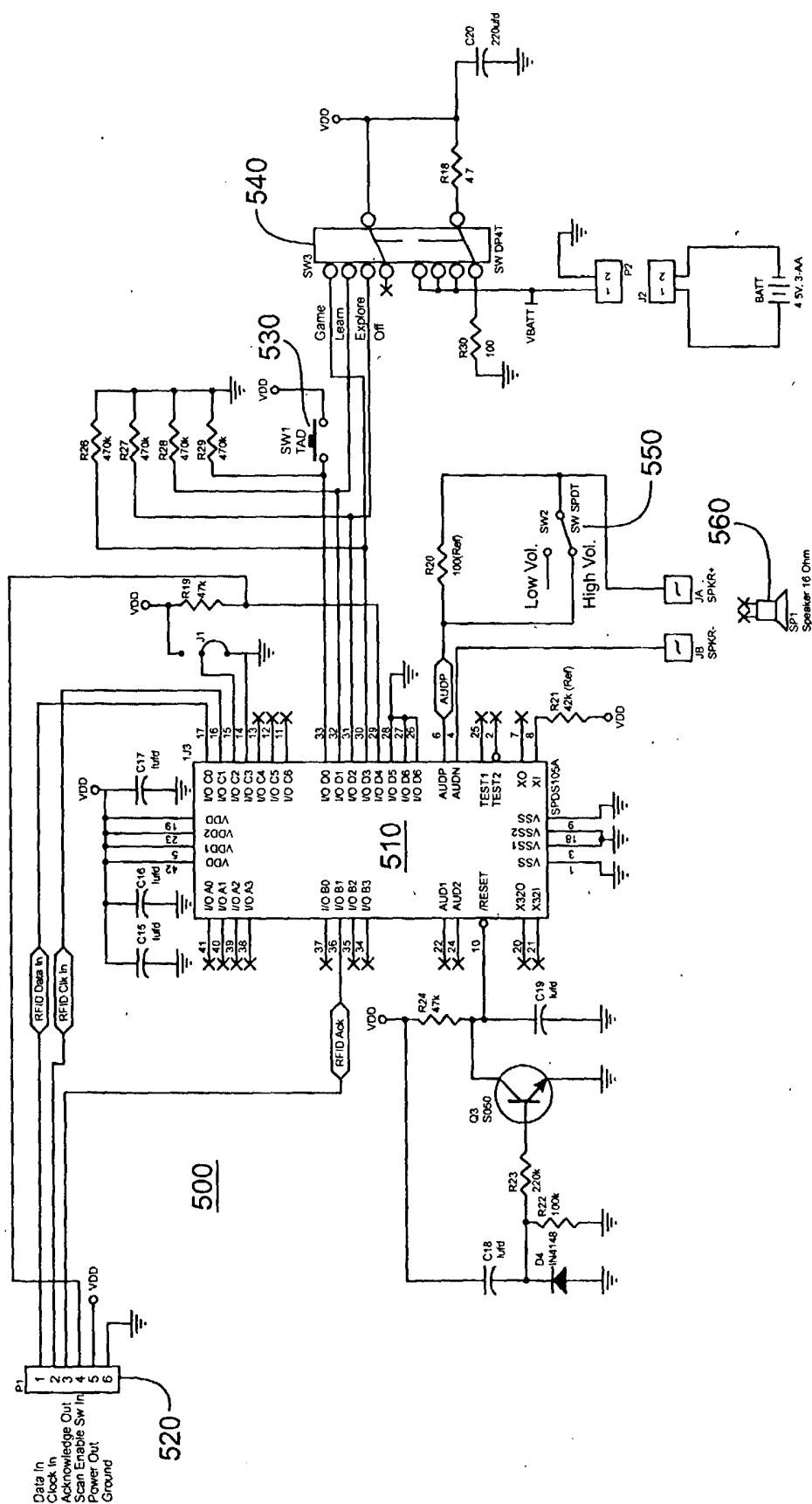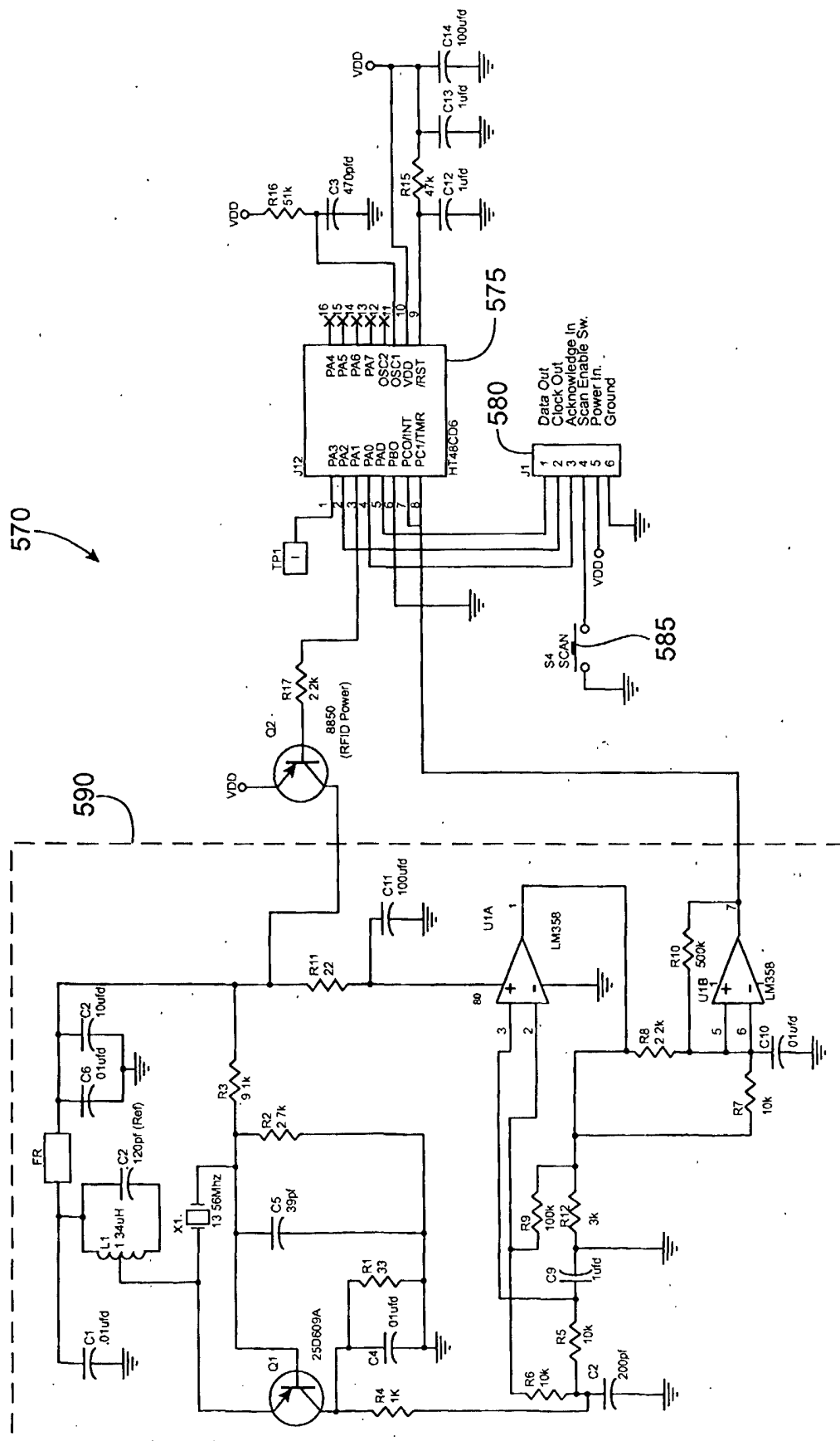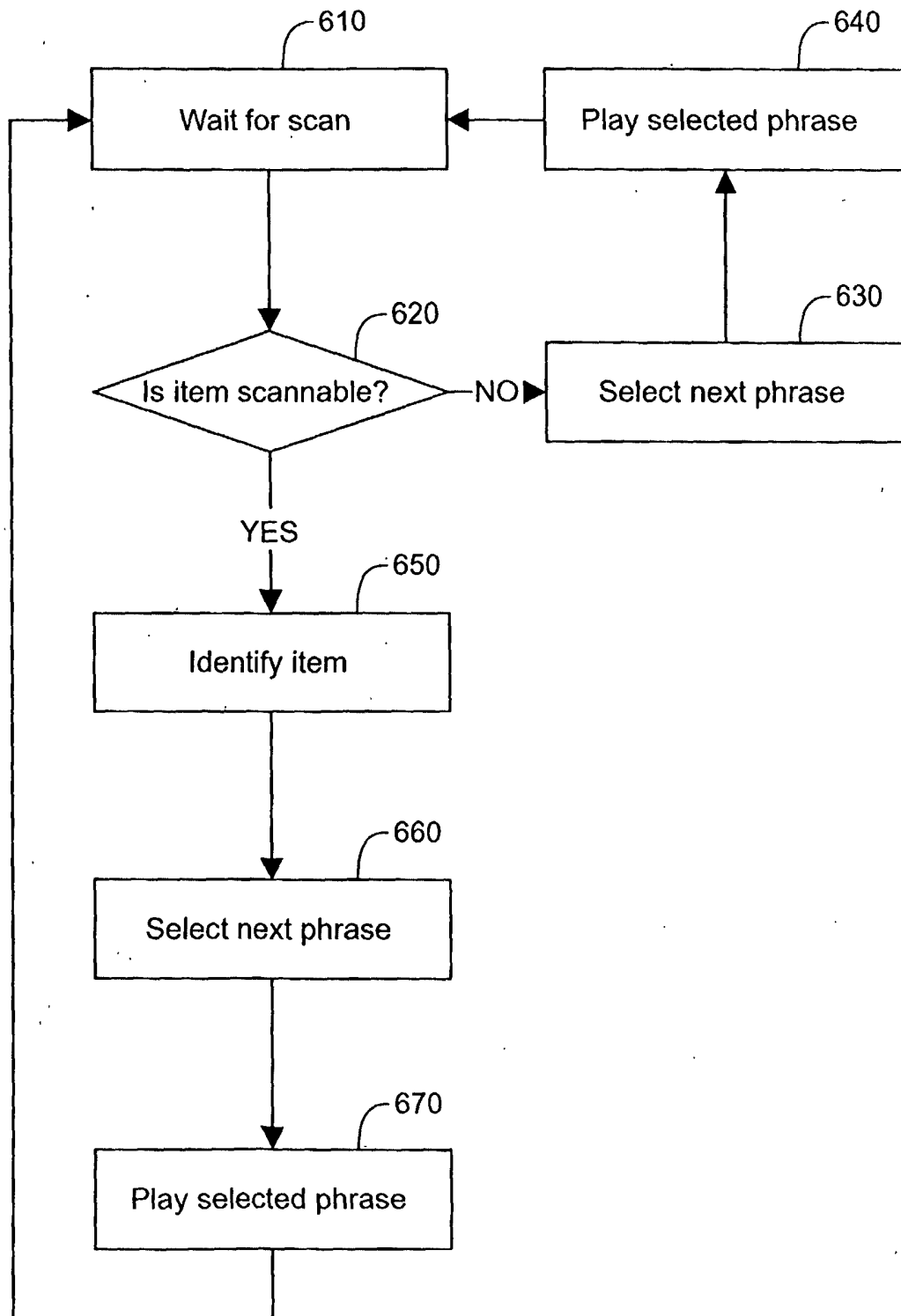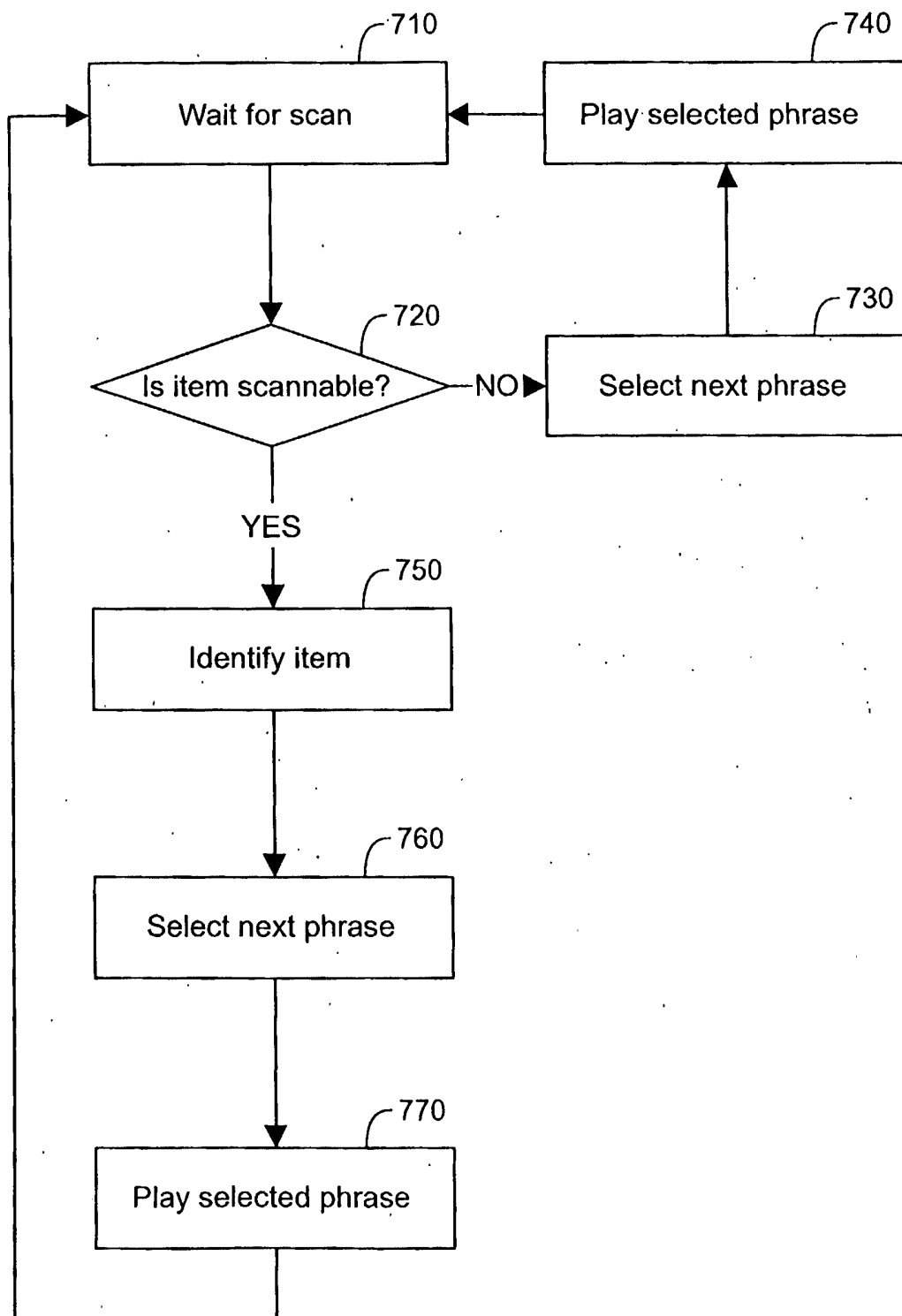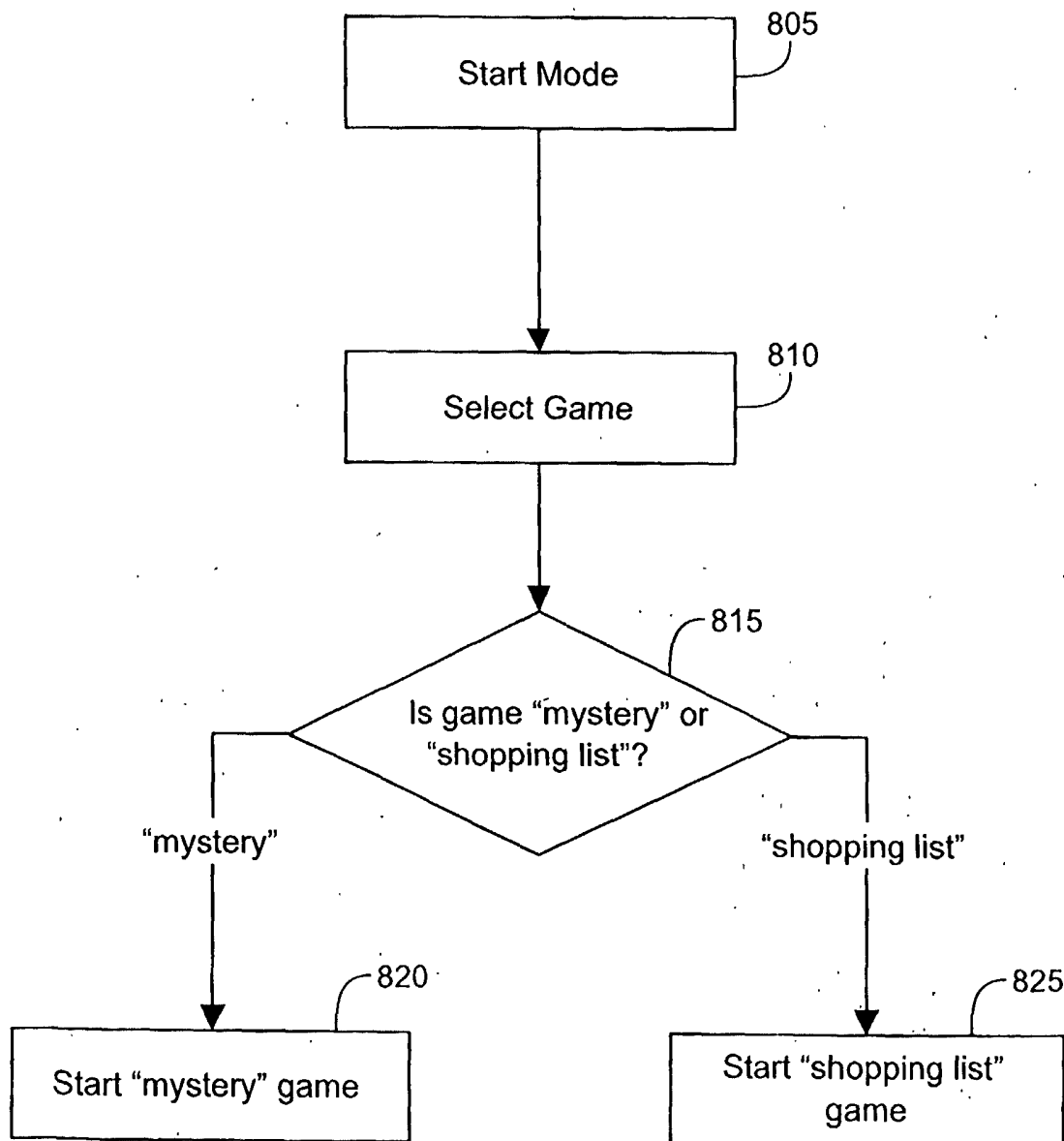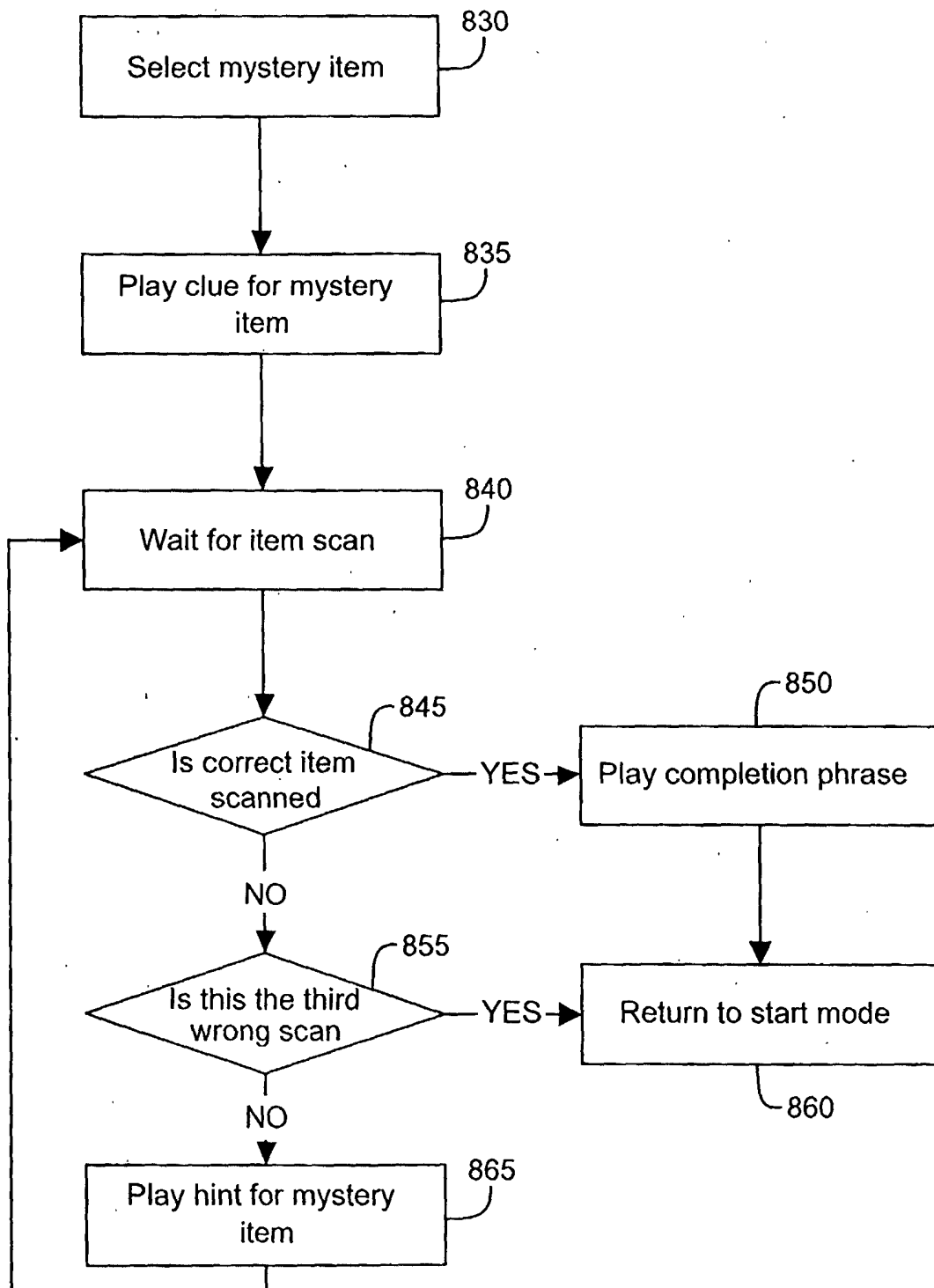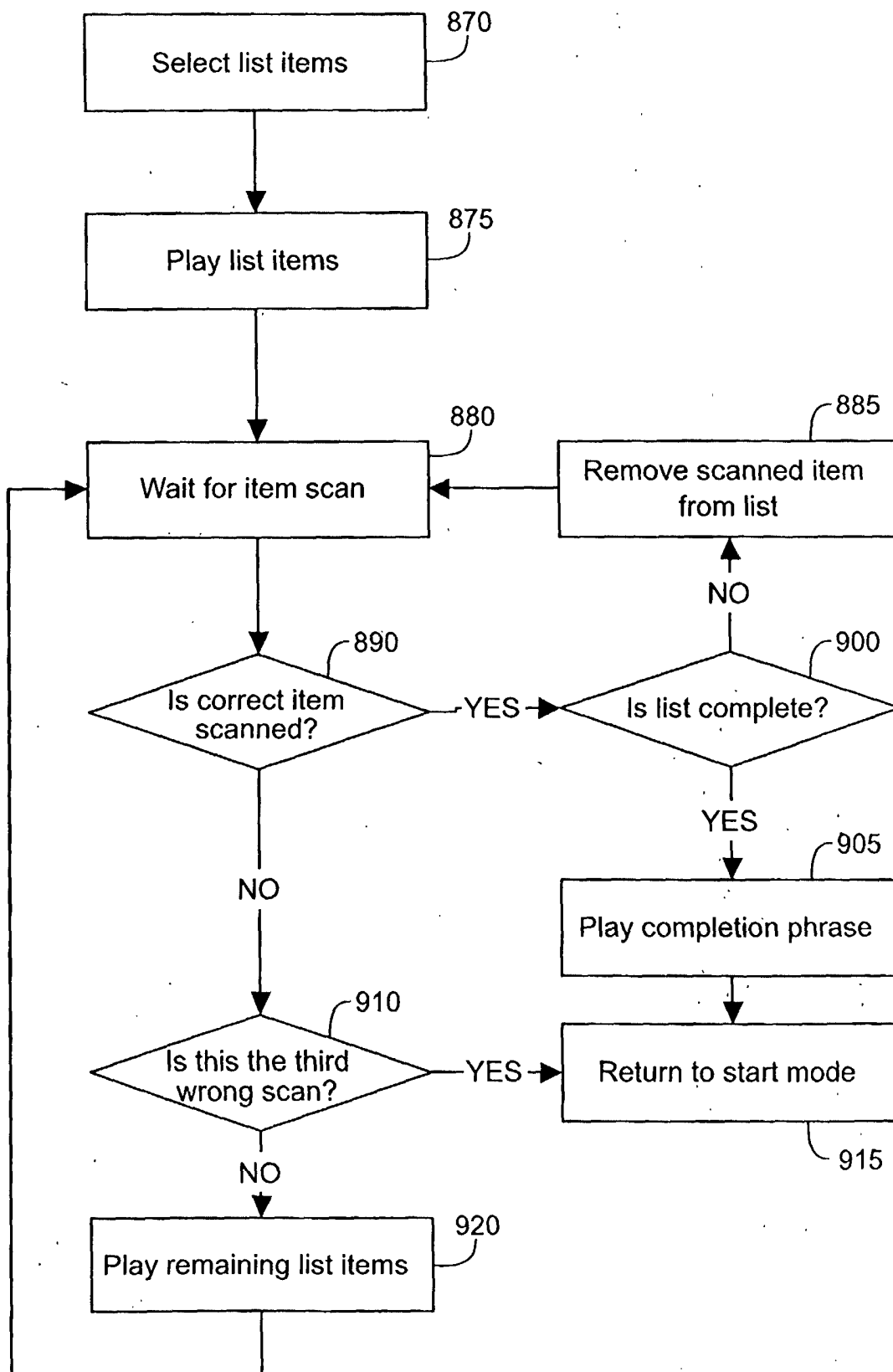
FIG. 8B

FIG. 8C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/00535

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63H 17/44;G06K 9/20
US CL : 446/397,483,485,491,489

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 446/397,483,485,491,489; 382/312

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 6,532,315 B1 (Plain et al.) 11 March 2003 (11.03.2003), Full text and Drawings.	1-17
X,P	US 6,484,939 B1 (Blaeuer) 26 November 2002 (26.11.2002), Full text and Drawings.	1-2, 15, 17, 19-25, 30-32
X,P	US 6,364,735 B1 (Bristow) 02 April 2002 (2.04.2002), Full text and Drawings.	1-2, 10, 19-23, 26-29
Y	US 5,476,407 A (Hall, Jr.) 19 December 1995 (19.12.1995), Full text and Drawings.	1-9, 11-12, 19-20, 24, and 26-27
Y	US 5,816,886 A (Cusolito) 06 october 1998 (06.10.1998), Full text and Drawings.	1-2 and 16
Y	US 3,883,146 A (Johnson et al.) 13 May 1975 (13.05.1975), Full text and Drawings.	1-2, 15, and 18

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier application or patent published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 May 2003 (02.05.2003)	3 0 MAY 2003

Name and mailing address of the ISA/US	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450	Tom Hughes *Sheila H. Veney*
Facsimile No. (703)305-3230	Telephone No. 703-308-1148 *Paralegal Specialist Tech. Center 3700*

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-24, drawn to a toy having the special technical feature of the scannable toy item is a color, a shape, and a number.

Group II, claim(s) 19-32, drawn to a Kit the special technical feature is a container.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature in group II that's not in group I is the container and the special technical feature in group I that is not in group II are the scannable items are a color, a shape, and a number.